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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/540,475

03/31/2000

Nuri R. Dagdeviren

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7590

11/30/2004

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EXAMINER

MUNOZ, GUILLERMO

ART UNIT

PAPER NUMBER

2637

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/540,475

Applicant(s)

DAGDEVIREN, NURI R.

Examiner

Guillermo Munoz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-26,28-39,41-61 and 63-115 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18-24,42 and 65 is/are allowed.
- 6) ☒ Claim(s) 1,3,15-17,25,39,41,43,44,46,47,49-61,63,64,66-68,77-80 and 87-115 is/are rejected.
- 7) ☒ Claim(s) 2,5-14,26,28-38,45,48,69-76 and 81-86 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The indicated allowability of claims 2-5, 7-13, 15-17, 26-38, 40, 50-52, and 54-62 is withdrawn in view of the newly discovered reference(s) to Telecommunications Industry Associated (TR-30.1/99-11-054) and Eyuboglu et al.. Rejections based on the newly cited reference(s) follow.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation mapping the negative levels to levels inside the basic constellation must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the

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drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to because Figure 3 appears to indicate mapping levels from within the basic constellation to levels outside the basic constellation. Examiner requires direction to place in the Specification that supports the illustrated limitation. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Figures 5 and 6 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 7, 9, 20, 22, 25, 31, 33-36, 39, 54, 56-58, 60, 72, 73, 84, 85, 92, 98, 103, 106, 108, 110, and 111 are objected to because of the following informalities:

Regarding claim 7, the term "k" in line 2 and the term "m" in line 4 are critical or essential to the practice of the invention, but not defined in the claim.

Regarding claim 9, see claim 7.

Regarding claim 20, see claim 7.

Regarding claim 22, see claim 7.

Regarding claim 25, the limitation "the precoder" in line 6 should be changed to —a precoder—.

Regarding claim 31, the limitation "the step of determining" in line 1 should be changed to —a step of determining—. Additionally, the punctuation "..." in line 5 should be corrected.

Regarding claim 33, the limitation “the step of obtaining” in line 1 should be changed to —a step of obtaining—.

Regarding claim 34, the limitation “the step of generating” in line 1 should be changed to —a step of generating—. Additionally, the term “p” and “j” in line 2 are critical or essential to the practice of the invention, but not defined in the claim.

Regarding claim 35, the limitation “the step of determining” in line 1 should be changed to —a step of determining—. Additionally, the term “n” and “j” in line 2 are critical or essential to the practice of the invention, but not defined in the claim.

Regarding claim 36, the limitation “the minimum level” in line 4 should be changed to —a minimum level—.

Regarding claim 39, the limitation “the precoder” in line 7 should be changed to —a precoder—.

Regarding claim 54, the term “k” in line 3 and the term “m” in line 5 are critical or essential to the practice of the invention, but not defined in the claim.

Regarding claim 56, the term “k” in line 3 and the term “m” in line 5 are critical or essential to the practice of the invention, but not defined in the claim.

Regarding claim 57, the limitation “the mapper” in line 1 should be changed to —the precoder—.

Regarding claim 58, see claim 57.

Regarding claim 60, see claim 57.

Regarding claim 72, see claim 7.

Regarding claim 73, see claim 7.

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Regarding claim 84, see claim 7.

Regarding claim 85, see claim 7.

Regarding claim 92, see claim 54.

Regarding claim 98, see claim 54.

Regarding claim 103, see claim 54.

Regarding claim 106, the term “k” in line 9 and the term “m” in line 11 are critical or essential to the practice of the invention, but not defined in the claim.

Regarding claim 108, the limitation “the mapper” in line 1 should be changed to —the precoder—.

Regarding claim 110, see claim 108.

Regarding claim 111, see claim 108.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 49-61, 63 and 90-115 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 49; the claim is vague because it recites functional language not supported by recitation in the claim of sufficient structure to warrant the presence of the

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functional language in the claim. See MPEP 706.03 (c). Additionally, the phrase “can be” in line 9 renders the claim indefinite. It is suggested the phrase “can be” be changed to —are—.

Regarding claim 58; the limitation “the partial result” in line 2, renders the claim indefinite. There is insufficient antecedent basis for these limitations in the claim.

Regarding claim 61; the limitation “the output block” in line 1, renders the claim indefinite. There is insufficient antecedent basis for these limitations in the claim.

Regarding claim 90; the phrase “can be” in line 10, renders the claim indefinite. It is suggested the phrase “can be” be changed to —are—.

Regarding claim 96; the phrase “can be” in line 9, see claim 90.

Regarding claim 101; the phrase “can be” in line 7, see claim 90.

Regarding claim 106; the phrase “can be” in line 7, see claim 90.

Regarding claim 111; the limitation “the partial result” in line 2, renders the claim indefinite. There is insufficient antecedent basis for these limitations in the claim.

Claims 50-61 and 63 are dependent on rejected claim 49; claims 91-95 are dependent on rejected claim 90; claims 97-100 are dependent on rejected claim 96; claims 102-105 are dependent on rejected claim 101; and claims 107-115 are dependent on rejected claim 106 and are rejected under 35 U.S.C. 112, second paragraph.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 15-17, 25, 39, 41, 43, 44, 46, 47, 64, 66-68, 77-80, and 87-89. are rejected under 35 U.S.C. 103(a) as being unpatentable over TR-30.1/99-11-054 (cited in IDS received March 31, 2000) in view of Eyuboglu et al..

Regarding claim 1; TR-30.1/99-11-054 teach a generalized TH precoding circuit wherein the precoding is based on the indices of the constellation points rather than on their actual levels, note page 3, proposal. TR-30.1/99-11-054 teach the output $y(n)$ is chosen from a predetermined N-point signal constellation, wherein the indices are in the same order as the levels, thereby, negative points have negative indices, and positive points have nonnegative indices. TR-30.1/99-11-054 do not explicitly state the TH precoder uses a basic constellation of levels.

Eyuboglu et al. teach a constellation having a subset of at least 64 constellation levels formed from 255 levels, note Fig. 4 and Col. 3, line 55 – Col.4, line 12.

Therefore, it would have been within the level of one having ordinary skill in the art at the time of the invention to characterize TR-30.1/99-11-054's constellation as a basic constellation in view of Eyuboglu et al.'s teaching of creating a subset of all possible 255 μ -law levels and using that subset for transmission, since Eyuboglu et al. suggest in Col.3, lines 60-62, that only 64 levels are required for upstream transmission.

Regarding claim 3; TR-30.1/99-11-054 do not explicitly state that the TH precoder comprises a feedback filter having delay elements and weighting elements, however, it is generally understood that TH precoder's use such elements. See for example Fig. 1 of PCM'00-018, which is an illustration of the TH precoder discussed in TR-30.1/99-11-054.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to characterize TR-30.1/99-11-054's precoder as having a feedback filter with delay elements and weighting elements, since they are generally understood to be components of a general TH precoder.

Regarding claim 15, TR-30.1/99-11-054 further teach the claimed subject matter "a digital to analog converter" by the inherency of upstream transmission across the analog local loop, note the Analog Channel element of Fig. 1.

Regarding claim 16, Regarding claim 3; TR-30.1/99-11-054 do not explicitly state that the upstream modem path comprises a transformer, however, it is generally understood that the analog channel spectral null at DC is caused by an isolation transformer. See for example Eyuboglu et al. Col. 3 line 35.

Regarding claim 17, Eyuboglu et al. further teach the claimed subject matter note Col. 4 lines 1-12.

Regarding claim 41, TR-30.1/99-11-054 further teach the claimed subject matter "the amplitude of the mapped constellation signal is limited" by the function of minimizing the signal energy, note page 3.

Regarding claim 64, TR-30.1/99-11-054 further teach the claimed subject matter "a index values are associate...with plurality of amplitude levels", note page 3 line 14.

Regarding claim 25, see claim 1.

Regarding claim 43, see claim 41.

Regarding claim 44, see claim 17.

Regarding claim 66, see claim 64.

Regarding claim 39, see claim 1.

Regarding claim 46, see claim 41.

Regarding claim 47, see claim 17.

Regarding claim 67, see claim 64.

Regarding claim 68, see claim 1.

Regarding claim 77, see claim 15.

Regarding claim 78, see claim 16.

Regarding claim 79, see claim 64.

Regarding claim 80, see claim 1.

Regarding claim 87, see claim 15.

Regarding claim 88, see claim 16.

Regarding claim 89, see claim 64.

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter:

Claims 18-24, 42, and 65 are considered allowable because the present invention comprises a precoder for an analog modem comprising a table for identifying a constellation divided into a basic constellation subset and a constellation subset outside the basic constellation subset. The precoder performs mapping of the levels outside the basic constellation onto levels inside the basic constellation as a function of an index associated with each level in the table. None of the references of record suggest or teach this combination of limitations. These distinct

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features have been included in independent claim 18 rendering it allowable. Claims 19-24, 42, and 65 are dependent on claim 18 and thereby are considered allowable.

Claims 49-61, 63, and 90-115 are written toward similar subject matter and would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 2, 5-14, 26, 28-38, 45, 48, 69-76, and 81-86 are objected to as being dependent upon a rejected base claim, but are written toward similar subject matter and would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Munoz whose telephone number is 703-305-4224. The examiner can normally be reached on Monday-Friday 8:30a.m-4:30p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 703-308-7728. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Guillermo Munoz

GM
November 5, 2004

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11-10-04